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Superfund Technical Assessment & Response Team V
EPA CONTRACT 68HE0319D0004

November 21, 2019

Mr. Peter Lisichenko, On-Scene Coordinator
U.S. Environmental Protection Agency, Region II
Superfund and Emergency Management Division
2890 Woodbridge Avenue
Edison, NJ 08837

EPA CONTRACT No: 68HE0319D0004
TD No: TO-0032-0033
DC No: STARTV-01-D-0107
SUBJECT: SITE-SPECIFIC COMMUNITY AIR MONITORING PLAN
NIAGARA FALLS BOULEVARD SITE
NIAGARA FALLS, NIAGARA COUNTY, YORK

Dear Mr. Lisichenko,

Enclosed please find the Site-Specific Community Air Monitoring Plan (CAMP), for the Removal Action to be performed at the Niagara Falls Boulevard Site located in Niagara Falls, Niagara County, New York. This plan covers the air monitoring and sampling activities to be conducted at the Site beginning October 14, 2019.

If you have any questions or comments, please do not hesitate to contact me at (603) 512-4350.

Sincerely,

WESTON SOLUTIONS, INC.

A handwritten signature in black ink, appearing to read "Bernard Nwosu", is written over a light gray rectangular background.

For Bernard Nwosu
Site Project Manager

Enclosure
cc: TDD File No.: TO-0032-0033

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In association with Eco-Risk, Pro-West & Associates, Inc., Avatar Environmental, LLC,
On-Site Environmental, Inc., and Sovereign Consulting, Inc.



SITE-SPECIFIC COMMUNITY AIR MONITORING PLAN

NIAGARA FALLS BOULEVARD SITE

Niagara Falls, Niagara County, New York

SSID No.: A23Q
EPA ID No.: NYN000206699

Prepared by:

Superfund Technical Assessment & Response Team V
Weston Solutions, Inc.
Federal East Division
Edison, New Jersey 08837

Prepared for:

U.S. Environmental Protection Agency, Region II
Superfund and Emergency Management Division
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EPA Air Sampling Forms

- RADēCO Model H-810 Calibration Functional Check Form F001
- Sample Control Form and Chain of Custody Form F002
- Personnel Air Monitoring and Exposure Estimate Form F003

1.0 INTRODUCTION

This Site-Specific Community Air Monitoring Plan (CAMP) has been prepared for the Removal Action to be implemented at the Niagara Falls Boulevard Site (the Site) beginning on October 14, 2019. The Site is located in a mixed commercial and residential area of Niagara Falls, New York. The Site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard and it encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property is occupied by a hardware store, Greater Niagara Building Center, Inc. (GNBC) and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy (DOE) conducted an aerial radiological survey of the Niagara Falls region and identified more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from an unknown source was used as fill on the properties prior to paving. Based on the original survey and subsequent investigations, it is believed that the radioactive slag was deposited on the Site.

In September/October 2006 and May 2007, the New York State Department of Environmental Conservation (NYSDEC) conducted radiological surveys of the interior and exterior of both properties on several occasions using gamma detectors, Exploranium-135, and Ludlum Model 2221 Ratemeter/Scaler (Ludlum-2221). With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels obtained with Exploranium-135 were relatively low. The highest reading in the newer area was 115 microrentgen per hour ($\mu\text{R/hr}$); elsewhere throughout the building, radiation levels generally ranged between 10 and 20 $\mu\text{R/hr}$. Exterior readings taken at waist height generally ranged between 10 and 350 $\mu\text{R/hr}$, while the maximum reading of 600 $\mu\text{R/hr}$ was recorded at contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 $\mu\text{R/hr}$, and at-contact readings ranged between 450 and 750 $\mu\text{R/hr}$. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum-2221 readings: one slag sample collected from an area of loose blacktop indicated a reading of 515,905 counts per minute (cpm) and the second slag sample collected in the marshy area indicated a reading of 728,235 cpm.

During a reconnaissance performed by the New York State Department of Health (NYSDOH) and NYSDEC on July 9, 2013, screening activities with a hand-held pressurized ion chamber (PIC) unit around an area of broken asphalt indicated gamma radiation levels at 200 $\mu\text{R/hr}$ and 500 $\mu\text{R/hr}$ from a soil pile containing slag at the Site. Readings over 600,000 cpm were recorded with a sodium iodide scintillator from the soil and slag pile.

On September 10, 2013, the U.S. Environmental Protection Agency (EPA) and Weston Solutions Inc., Site Assessment Team (SAT), conducted gamma radiation screening of the 9524 Niagara Falls Boulevard property using Ludlum-2221. On December 4 through 7, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard

properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear northern portion of the 9540 Niagara Falls Boulevard property. SAT documented and delineated the areas of observed contamination at the Site by measuring the gamma exposure rates and determining where the gamma exposure rate around the source equaled or exceeded two times (2x) the site-specific background gamma exposure rates. An area of the Site, approximately 168,832 square feet (sq. ft.), indicated gamma radiation levels exceeding 2x the background measurement of 8,391 cpm.

In December 2013, SAT utilized the hollow-stem auger drilling method to collect a total of 16 soil samples, including one field duplicate, and three slag samples from 15 boreholes advanced throughout the Site and on the First Assembly Church property. The two soil samples collected on the First Assembly Church property were to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval. Laboratory analytical results indicated concentrations of radionuclides found in the slag and soil samples to be significantly higher than at background condition.

In July 2015, EPA with the support of Weston Solutions Inc., Removal Support Team 3 (RST 3), currently Superfund Technical Assessment & Response Team V (START V), conducted a Removal Assessment of the Site in order to delineate areas of observed contamination by comparing gamma measurements from suspected source areas with measurements obtained from a background location. Interior ground radiological survey of on-site properties, including 9524 Niagara Falls Boulevard and 9540 Niagara Falls Boulevard, and exterior ground radiological survey of the Site and an off-site background location at the church property on 9750 Niagara Falls Boulevard was conducted. Utilizing a Ludlum-2241 Ratemeter/Scaler and a sodium iodide (NaI) 2x2 detector, gamma measurements collected by RST 3 in the one building at 9524 Niagara Falls Boulevard indicated exposure rates ranging from 6,400 cpm around the pin setter area to 45,000 cpm (more than 5x above background) in the rear vestibule. Gamma exposure rates in most areas of the building at 9524 Niagara Falls Boulevard were generally above background. Gamma readings in the one building at 9540 Niagara Falls Boulevard ranged from 6,200 cpm in the showroom to 200,000 cpm (more than 23x above background) in one storage room located southwest of the building. Generally, gamma exposure rates in most areas of the building at 9540 Niagara Falls Boulevard varied from background to several times above the background. Gamma survey conducted in exterior areas throughout the Site, including asphalt-paved and unpaved areas of both 9524 Niagara Falls Boulevard and 9540 Niagara Falls Boulevard, indicated exposure rates ranging from 10,500 cpm to 600,000 cpm (more than 70x above background). Outdoor gamma readings were generally more than 2x background.

In August 2015, RST 3 conducted additional Removal Assessment soil sampling and radiological survey of exterior locations in order to verify potential releases of radiation-containing materials in soil and fill material associated with slag deposits on-site, determine additional radiation source areas, and delineate the extent of radiological contamination at the Site. Analytical results indicated concentrations of radium-226 (Ra-226) above the EPA Site-Specific Action Level of 2.48 picocuries per gram (pCi/g) in the soil samples.

In May 2017, RST 3 performed additional soil sampling at 20 test pit locations throughout the Site. A total of 88 soil samples were collected from all the test pits at 6-inch intervals below

ground surface (bgs) up to a depth of 48 inches bgs, depending at what depth the native confining clay layer was encountered. The soil sampling event was conducted to further verify the vertical extent of potential releases of radiation-containing materials in soil and delineate the extent of the on-site radiological contamination. Analytical results indicated concentrations of Ra-226 above the EPA Site-Specific Action Level of 2.48 pCi/g in 32 of the soil samples.

In May 2018, RST 3 provided field sampling support to EPA's Emergency and Rapid Response Services (ERRS) contractor, Guardian Environmental Services (GES), with collecting 43 soil samples from 13 test pit locations throughout the Site for transportation and disposal cost purposes. Test pits were advanced to depths up to 48 inches bgs. ERRS restored all the test pit locations to their original condition and the samples were shipped to ERRS-procured laboratory for disposal analysis.

In September 2018, RST 3 provided site activity oversight, keeping daily records of site operations through photographic documentation and notations in the Site log book. Additionally, RST 3 conducted community air monitoring for particulates (dust) using DataRAM particulate air monitors, air sampling for radioactive particulates using RADēCO volumetric air samplers with filter media attachment, and post-excavation soil sampling.

1.1 Community Air Monitoring Program Objectives

The primary contaminants of concern in on-site soils are radioactive materials from the decay process of uranium and thorium. Specifically, radium-226 and radium-228 have been identified at concentrations exceeding the EPA's Site-Specific Preliminary Remediation Goals (PRGs) of 2.48 and 15.9 pCi/g, respectively.

Uranium (half-life of 4.5 billion years) is a naturally occurring radioactive isotope, decaying primarily by alpha emission with accompanying gamma. Uranium produces several radioactive isotopes including radium-226 (Ra-226) and radon-222 (Rn-222), which have a half-life of 1,602 years and 3.8 days, respectively. Rn-222 is a radioactive isotope which naturally occurs as a gas, producing several radioactive radon decay products, including polonium-218, lead-214, bismuth-214, and polonium-214.

Thorium (half-life of 14 billion years) is a naturally occurring radioactive isotope, decaying primarily by alpha emissions with accompanying gamma. Thorium produces several radioactive isotopes, including gamma emitting actinium-228 (Ac-228), lead-212 (Pb-212), bismuth-212 (Bi-212), radium-224 (Ra-224), and thoron-220 gas (Rn-220). Ra-224 and Rn-220 have a half-life of 3.6 days and 55 seconds, respectively.

The selected remedy for the Removal Action is the excavation and off-site disposal of contaminated soils. Work zone activities at the Site will include, but are not limited to, breaking/removal of concrete foundation slabs and excavation of subsurface radioactive soils within the on-site building at 9540 Niagara Falls Boulevard, excavation of subsurface soils around paved driveways and parking areas of the Site, clearing/grubbing of overgrown vegetation, building construction, as well as activities involving the loading and transporting of contaminated soils for off-site disposal. Since Site activities could generate dust which may potentially contain elevated concentrations of radioactive particulates, the following objectives have been set for the Site air monitoring program:

- Establish Site-Specific Action Levels for dust/Site contaminants;
- Continuously monitor dust particulate concentrations in air to ensure that off-site migration of contaminants remains below the Site-Specific Action Levels;
- Collect confirmation dust particulate samples for radioactivity analysis to ensure that unhealthy levels of these contaminants are not exceeded in the ambient air; and
- Establish corrective actions to be taken in the event that temporary exceedances of Site-Specific Action Levels are experienced.

This Site-Specific CAMP outlines the air quality monitoring and sampling procedures to be followed to protect on-site personnel and the surrounding community from potential airborne contaminant releases during the implementation of the Removal Action.

2.0 PERIMETER AND COMMUNITY AIR MONITORING

2.1 Air Monitoring Procedures

Air monitoring activities will be conducted in accordance with the procedures outlined within the EPA guidance document entitled, “Superfund Program Representative Sampling Guidance, Volume 2: Air (Short-Term Monitoring), Interim Final, 1995. EPA 540/R-95/140. (OSWER Directive 9360.4-09, PB 96-963206).” Appropriate activities as outlined within this document include the monitoring necessary to ensure appropriate Health & Safety levels for protection of on-site personnel and to ensure that the surrounding community is not exposed to site-related constituents at concentrations above the Site-Specific Action Levels.

Particulate air monitors (*e.g.*, DataRAMs or equivalent) equipped with PM₁₀ (particulate matter smaller than 10 microns in diameter) detectors will be used to monitor dust levels throughout the duration of the Removal Action. The monitors will be operated each workday and will measure PM₁₀ dust concentrations in real time. The monitors are calibrated by the equipment manufacturer prior to being used at the Site. Once turned on, the monitors record dust concentrations on a 15-minute time-weighted average (TWA). Meteorological data consisting of wind speed, wind direction, temperature, and barometric pressure will be recorded each day to position the monitoring equipment in appropriate upwind and downwind locations. All air monitoring data with time, current activity and the locations of monitoring equipment will be recorded in the on-site files and will be available for review. Meteorological data will be obtained from Weather Underground (<http://www.wunderground.com/>) and recorded daily in the Site logbook.

Air monitoring will consist of continuous real-time air quality monitoring and data collection. Monitoring locations will be upwind, at areas of intrusive site activity, and downwind. The monitoring stations will be linked via EPA’s Viper wireless monitoring system, which will provide instantaneous real-time air quality readings through a computer server. The air monitoring data generated will help to determine if dust suppression activities are effective at maintaining dust levels below the Site-Specific Action Levels. Although air monitoring data from each monitoring station is automatically being stored real-time in a computer server, the air monitoring data will be downloaded from each DustTrak unit to a computer or electronic data storage device at the end of each workday.

Table 2-1: Air Monitoring Specifications

Direct Reading Instrumentation	Monitoring Locations	Monitored Parameters
DustTraks	<ul style="list-style-type: none"> Perimeter monitoring Workspace monitoring 	Total PM ₁₀ Particulates

2.2 Basis for Establishing the Air Monitoring Action Levels

The community air monitoring program at the Site consists of a combination of perimeter and community monitoring for particulates (dust). The Site-Specific Action Level for PM₁₀ particulates has been based on the EPA National Ambient Air Quality Standards (NAAQS). The EPA NAAQS for total PM₁₀ over a 24-hour period is 150 micrograms per cubic meter (µg/m³). There is no specified NAAQS listed for particulate matter containing Ra-226 and Ra-228. For this reason, a more conservative approach, of 0.100 mg/m³ (100 µg/m³) 15 minute average over background level, with a maximum of 0.150 mg/m³ (150 µg/m³) 15 minute average over background will be adopted as the Site-Specific particulate Action Level. See Table 2-2 for the air monitoring Action Levels for particulates at the Site.

Table 2-2: Community Air Monitoring Action Levels for Particulates (Direct Reading Instrumentation)

Parameter	Monitoring Locations and Interval	Action Levels (Above Upwind)	Response Activity
Dust (PM ₁₀)	Perimeter and community monitoring locations with dust readings every 60 seconds, calculate 15-minute average during Removal Action activities.	< 100 µg/m ³	<ul style="list-style-type: none"> Continue monitoring.
		≥ 100 µg/m ³	<ul style="list-style-type: none"> Continue monitoring. Begin dust suppression measures. Notify field crew that early warning alert level has been reached.
		≥ 150 µg/m ³	<ul style="list-style-type: none"> Cease activities; re-evaluate dust suppression measures. Analyze collected air samples for the contaminants of concern. If during transport and disposal of hazardous waste, commence community air monitoring.

2.3 Non-working Hours

No release of contaminants above background levels is anticipated during non-working hours, therefore, no monitoring will be conducted during that time period.

2.4 Equipment Maintenance and Calibration

All air monitoring equipment will be maintained in accordance with applicable manufacturer recommendations. All pertinent data will be logged in a health and safety logbook (or equivalent) and maintained on site for the duration of site activities. All direct-reading instrumentation will be calibrated in accordance with the manufacturer's instructions.

2.5 Engineering Controls

Dust suppression measures, utilizing a water mist, will be the primary engineering control used during all site intrusive activities. It will be implemented as necessary to prevent the generation of dust during breaking of concrete foundation slabs, soil excavation and soil handling operations. Water will be used to wet the surfaces of all contaminated soil stockpiles, loading areas, access roads, and areas being excavated.

3.0 AIR SAMPLING

3.1 Air Sampling Procedure

In addition to particulate monitoring, perimeter and community air sampling will be performed using RADēCO H-810 air samplers and will be collocated with or near each DataRAM unit in the field. Each air sampler will contain a 2-inch filter holder with a RADēCO 0750-37 glass fiber air filter. The air samplers will be set to collect air filter samples at a flow rate of 5 cubic feet per minute (cfm) for a target volume of 2,400 cubic feet (cf) over an approximately 8 hour period. Each day, START V will calibrate the air samplers using the RADēCO Air Calibrator Model D-828 prior to deploying them. Calibration readings will be recorded using the RADēCO Model H-810 Calibration Functional Check Form F001. Calibration forms will be reviewed and maintained on-site by the EPA Health Physicist (HP) prior to air sampler being used in the field.

Air filter samples will be collected at a minimum every 4 hours during intrusive site operations (*i.e.* one collected before lunch and another collected after lunch for each air sampler). All air filter samples collected will be placed in a glassine envelop before being placed in a re-sealable plastic bag. Air sampling information, including date, start and stop time, start and ending flow rates, and total volume will be entered into EPA's SCRIBE sample management database by START V. Sample labels generated from the SCRIBE software will be placed on the re-sealable plastic bag for each air sample. All information collected from each air sampler will be documented by START V using Sample Control Form and Chain of Custody Form F002. Documentation associated with the sample including Forms F001 and F002 will be kept with the sample until relinquished to the field measurement personnel.

Upon receipt of the air samples, the field measurement personnel will count each air sample for 10 minutes using a Ludlum 3030. Each sample will be counted at a minimum daily until background levels are reached to ensure high measurements are due to radon and not airborne contamination. Daily air sampling results information will be recorded using the Personnel Air Monitoring and Exposure Estimate Form F003.

Table 3-1: EPA Sampling Procedures

Analyte	Sampling Method	Sampling Media	Recommended Flow Rate (Liters per Minute)*	Total Volume	Site-Specific Action Level
Ra-226	Per EPA HP, utilizing RADēCO Air Sampler	Glass fiber air filter	5 cfm	2,400 cf	$3 \times 10^{-11} \mu\text{Ci}/\text{cm}^3$

*Actual flow rates will be determined in the field based on prevailing Site conditions. Humidity conditions and precipitation events may require air sampling activities to be cancelled for the day.

3.2 Basis for Establishing Air Sampling Action Levels

In order to protect on-site personnel and nearby residences from exposure to site-related contaminants, the Site-Specific Exposure Limit of air concentration for Ra-226 has been set by EPA at 3×10^{-11} microCurie per cubic centimeter ($\mu\text{Ci}/\text{cm}^3$) which is the same allowable air concentration as the public limits. This Exposure Limit was adopted by EPA as the Site-Specific Risk-Based Action Level. For effective implementation of engineering controls, all air sampling results will be compared with the Site-Specific Risk-Based Action Levels. Most analytical results of air samples collected will be available on site for review the day after sample collection.

Based on air filter sample results, the EPA HP will determine if additional respiratory protection and/or potential administrative or engineering controls are needed, if exposure limits are exceeded. If analytical results of air samples indicate that the Site-Specific Risk-Based Action Levels were exceeded, the cause of the exceedance will be investigated and appropriate corrective actions will be implemented immediately. An evaluation of additional engineering control options, additional off-site air monitoring/sampling and a reduction in daily work hours will also be considered. See Table 3-2 for the Site-Specific Risk-Based Action Levels established for the Removal Action.

Table 3-2: Community Air Sampling Action Levels

Parameter	Sampling Interval and Locations	Action Levels (Above Background)	Response Activity
Contaminants of Concern	Upon initiating intrusive activities and periodically; at perimeter and community monitoring locations	$<3 \times 10^{-11} \mu\text{Ci}/\text{cm}^3$ – Ra-226	<ul style="list-style-type: none">• Continue monitoring PM_{10}.
		$>3 \times 10^{-11} \mu\text{Ci}/\text{cm}^3$ – Ra-226	<ul style="list-style-type: none">• Cease activities; investigate cause.• Re-evaluate dust suppression measures.• Consider additional off-site air monitoring/sampling.• Evaluate site conditions for other engineering control options.

3.3 Non-working Hours

No release of contaminants above background levels is anticipated during non-working hours, therefore, no air sampling will be conducted during that time period.

4.0 REPORTING OF AIR MONITORING AND SAMPLING RESULTS

4.1 Community Notification Procedures

The specific community notification procedures will be at the discretion of the EPA On-Scene Coordinator (OSC). The exact notification procedures will be developed based on the most feasible means of getting information to the surrounding community in an effective, useful, and timely manner.

4.2 On-Site Reporting Procedures

The Site Health and Safety Representative will maintain a sample log and report airborne levels on a daily basis to the EPA OSC. Elevated results (above Action Levels) will be reported immediately to the EPA OSC so that appropriate engineering controls can be implemented to reduce airborne levels.

4.3 Reporting Procedures for Site Employees

Where personal sampling for on-site workers is performed, the Contractor will be responsible for informing employees and subcontractors of their monitoring results to comply with Occupational Safety and Health Administration (OSHA) regulations and good occupational health practices. Within five working days after the receipt of monitoring results, the Contractor will notify each employee of the results representing that employee's level of exposure.

Whenever the results indicate that employee exposure exceeds the OSHA Permissible Exposure Limits (PELs)/EPA Risk-Based Action Level, notification shall be provided to the affected employee stating that the OSHA PEL/EPA Risk-Based Action Level was exceeded and providing a description of the corrective action taken to reduce exposures to a level below the OSHA PELs/EPA Risk-Based Action Level.

4.4 Reporting Procedures for the Analytical Laboratory

Although air samples will be analyzed on-site and not by an analytical laboratory, chain-of-custody (COC) procedures will be followed during sample handling and submission to field measurement personnel for analysis. Areas sampled, tasks performed, duration, volumes, and analytical results will be available on-site for review and an air sampling report will be provided by RST 3 upon completion of the Removal Action. Sampling and analysis will be performed in accordance with the appropriate EPA method under the direction of the EPA OSC.

4.5 Data Review and Interpretation

The general public will be able to review the captured data for the Site once the air sampling data has been validated and finalized, and based upon the EPA OSC's authorization for release of the information. Monitoring records will be maintained on site.

EPA Air Sampling Forms

RADēCO Model H-810 Calibration Functional Check Form F001

Sample Control Form and Chain of Custody Form F002

Personnel Air Monitoring and Exposure Estimate Form F003



F001, RADeCO Model H-810 Calibration Functional Check Form

SECTION 1: INSTRUMENT DATA

Air Sampler Make:

Air Sampler Model:

Air Sampler S/N:

Air Sampler Calibration Due:

Air Filter Type:

Air Filter Size:

Flow Calibrator S/N:

Flow Calibrator Calibration Due:

SECTION 2: CALIBRATION DATA

Physical Condition of Instrument (circle one):

Satisfactory

Unsatisfactory

LINEARITY VERIFICATION

Reference (CFM)	Calibrator Flow (CFM)	Sampler Flow (CFM)	Comments
1.0			
2.0			
3.0			
4.0			
5.0			
6.0			

CALIBRATION RANGE		ENVIRONMENTAL CONDITIONS	
High Flow:	CFM	Temperature:	°F
Mid Flow:	CFM	Humidity:	%
Low Flow:	CFM	Pressure:	inches Hg
COMMENTS:			

Calibrated By:

Date:

Reviewed By:

Date:

Calibration Due:

SAMPLE CONTROL FORM & CHAIN OF CUSTODY

SCF -

☐ TABLET - Sample information entered on Tablet

Sampling Information (to be filled out by the Field Team)										
Field Team:			Collector's Name:				Home Org:			
Longitude:			Location Description:							
Latitude:										
Collection Date:		Collection Time (24hr):		Area Exposure Rate:		Contact Dose Rate:				
Collection Comments:										
Sample Type (use only once)	Air	Sampler ID #		Type:		Filter size & Type: <input type="checkbox"/> Paper <input type="checkbox"/> Cartridge <input type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> Other				
		Date/Time ON:		Date/Time OFF:		OR	Total Volume: units:			
		Start Flow Rate units		Stop Flow Rate units						
		Additional Air Filter, Provide Sample #								
	Milk	<input type="checkbox"/> Cow <input type="checkbox"/> Goat <input type="checkbox"/> Other:			<input type="checkbox"/> Stored Feed <input type="checkbox"/> Pasture <input type="checkbox"/> Other:					
		Milking Date:		Milking Time:		Number of Animals				
	Soil	Depth of soil sample: cm			Vegetation collected with soil sample? <input type="checkbox"/>			If "YES" check box if "NO" leave blank		
		Sample surface area: cm ²			If vegetation in separate container, provide sample #:					
	Water	<input type="checkbox"/> Surface <input type="checkbox"/> Ground / Well <input type="checkbox"/> Potable / Tap <input type="checkbox"/> Other:								
	Other	<input type="checkbox"/> Food <input type="checkbox"/> Feed <input type="checkbox"/> Instrument <input type="checkbox"/> Swipe <input type="checkbox"/> Other:				Description:				
Sample Area (cm): L W H										
Sample Receiving (to be filled out by sample control & hotline technician)										
Processing Priority: <input type="checkbox"/> Urgent <input type="checkbox"/> Duplicate <input type="checkbox"/> Split <input type="checkbox"/> Composite <input type="checkbox"/> Blank										
Receipt Contact Dose Rate uR/hr:		<input type="checkbox"/> Contamination Check: Forms and sample bags surveyed.				Weight of Sample gram				
Analysis Requested:										
Remarks/Special Instructions										
Custody Transfer (Signatures)										
Relinquished By:			Date/Time		Received By:			Date/Time		
Relinquished By:			Date/Time		Received By:			Date/Time		
Relinquished By:			Date/Time		Received By:			Date/Time		
Relinquished By:			Date/Time		Received By:			Date/Time		

Original with Sample

Copy to Sample Control

October 2011

SAMPLE CONTROL & CHAIN - OF - CUSTODY FORM

Field	Data
Tablet	Check if "Sample Information" is recorded using MPCD Tablet. Only Chain-of-Custody is needed.
SCF -	If no Barcode or Sample Control Number, then create one (SCF-XXXXX).
Collection Team ID	Enter Team Name or Number.
Collector's Name	Enter Collectors Name (Can be team captain).
Org	Enter Collectors Home Organization.
Location Description	Enter a description of the sample location. This can be an address with a description of the location in relation to local landmarks (i.e. near stop sign).
Latitude/Longitude	Estimated from map or read from GPS. The preferred format is degrees and decimal degrees. (i.e., Longitude = -108°.27976).
Collection Date	Enter the "Date" the Sample was Collected (dd-mmm-yyyy 02SEP2009). For air or composite samples this is the "Date Off" (end date of collection period).
Collection Time	Enter the Time the Sample was Collected (24 hour clock). For composite samples this is the "Time Off" (end time of collection period).
Area Exposure Rate	Record the average area Exposure Rate where the sample is to be collected.
Contact Dose Rate	If background permits, then enter the dose rate at contact with the sample container.
Collection Comments	Enter any pertinent information on the collection process (i.e. unusual occurrences).
Sample Type	Complete the appropriate "Sample Type". Use only one sample per form.
Air Sample	Enter Air Sampler ID, Type and Filter Size, Date On & Off (dd-mmm-yyyy), Time On & Off (24hr). Enter either Start & Stop Flow Rate or Total Volume and Units.
Additional Air Filter, Provide Sample #	Enter additional Air Sample # for each separate Air Filter Matrix taken at same location. (i.e. Paper & Charcoal Cartridge)
Milk Sample	Check the "Type" of milk sampled. If "Other", describe. Enter the "Feed Type" the cattle eat. If "Other", describe in the remarks. Enter Milking Date (dd-mmm-yyyy) & Time (24hr)
Soil Sample	Enter Depth of soil sample in centimeters. Enter the surface area sampled in centimeters ² (square centimeters). If a separate vegetation sample was collected indicate so and enter the sample number of the SCF for the vegetation sample. DO NOT ENTER TWO SAMPLES ON A SINGLE SCF.
Water Sample	Check the "Source" of the water sample. If "Other", describe.
Other	Check the sample type Food – Human Consumption, Feed – Animal Consumption, "Instrument" (Spectra to be saved in RAMS), "Swipe" or "Other"
Sample Area (cm)	Record the Area the Vegetation or Swipe Sample was taken from (Length, Width and Height).
Description	Enter the description of sample and the size or volume of sample (i.e. Vegetation 1-gal sealable bags grass, Swipe 100 cm ²).
Processing Priority	Identify Rush (Priority or Urgent) samples designated by the monitoring manager. 1 is high priority.
Duplicate Sample #	A duplicate sample is a second sample collected at the same location. Create duplicate paperwork and assign a new sample number to the duplicate and record the other sample number here.
Split Sample#	A split sample is a single sample collection split into two sample containers. Create duplicate paperwork and assign a new sample number to the split sample and record the new sample number here.
Receipt Contact Dose Rate	Samples are checked for activity as they pass through the hot line. Record the instrument reading and units.
Contamination Check	Check exterior of sample bags and forms for contamination. This step is performed at the hot line.
Weight of Sample	Record the Weight of Soil, Water & Vegetation Samples.
Analyses Requested	Record analysis requested by Assessment or Monitoring and Sampling Supervisors if known.
Remarks/Special Instructions	Enter any special instructions (i.e., homogenize sample). Indicate whether the sample must be prepared before being forwarded to the laboratory. Enter unusual circumstances discovered during sample receipt. Does not include problems recorded on the Non-Conformance Memo.
Relinquished by	Signed by person releasing custody of the sample. The custody must be relinquished to a person or secured area
Date/Time	Date and Time (24 hr) custody transferred
Received by	Signed by the person receiving the sample



F003 Personnel Air Monitoring and Exposure Estimates

Air Sampling Data

Sample collector _____
Sample start time _____
Sample flow _____
Sample Volume _____

Location _____ Date _____
Sample end time _____

Isotope _____ ☐ Alpha ☐ Beta ☐ Gamma DAC _____
Isotope _____ ☐ Alpha ☐ Beta ☐ Gamma DAC _____

Counting Data

Counter Type ☐ Ludlum 2929 ☐ Ludlum 3030 ☐ Other _____

Sample ID# _____ Date/ time sample collected _____
Sample submitted by _____ Date/time _____
Sample received by _____
Date/ time sample counted _____
Sample disposition _____

Background count time _____ Alpha _____ cpm Beta _____ cpm
Date/time first count: _____ Alpha _____ cpm Beta _____ cpm
Date/time followup: _____ Alpha _____ cpm Beta _____ cpm
Date/time followup: _____ Alpha _____ cpm Beta _____ cpm
Date/time followup: _____ Alpha _____ cpm Beta _____ cpm

Volume (cf)	Isotope	DAC	Count time	Bkg	Gross Alpha	Net Alpha	Net Count Rate	Air Conc	Fractional DAC
Volume (cf)	Isotope	DAC	Count time	Bkg	Gross Beta	Net Beta	Net Count Rate	Air Conc	Fractional DAC

Total fractional DAC _____

Exposure Estimates

EPD #	Exposure Time	Fractional DAC	DAC hrs	Respiratory Protection Factor	Adjusted DAC hrs	Projected Dose

Analyzed By _____ Date _____ Reviewed by _____ Date _____

When this form is completed with personnel names and exposure information, it becomes a confidential record and may be protected IAW Privacy Act 1974 or Health Insurance Privacy Portability Act.